US TC Activity

- ***US Involvement in TC – Background.***
- ***US Integration/Engineering Efforts:***
  - ***Engineering Help***
    - ***Engineers @ CERN***
      - ***Project Office***
      - ***Configuration Control***
      - ***Position for an Integration/Installation Eng.***
    - ***Engineering in the US***
      - ***Configuration Control - Envelopes.***
      - ***Access***
      - ***Movements/Installation***
- ***Future Plans***

US Involvement - Background

- *TC efforts have traditionally been based and centered at CERN (~ exclusively).*
- *The ATLAS MOU's specify deliverables to the systems and common funds items.*
  The "deliverables" are typically a component (e.g. Cryostat) that is built to the ATLAS specification.
- *TC Engineering/Physicist manpower was assumed (by most collaborators) to come from CERN.*
  CERN expected the effort to be shared by the whole collaboration.
- *Most institutions/funding agencies find that their MOU deliverables saturate their resources and have little or no resources available for for TC.*
- *The US had (have) the opinion that unless a significant strengthening of TC (both Engineering and Physicists) took place, ATLAS risks significant delays and problems when installation and commissioning stage starts.*

"New TC" – US View

- ***In the Middle of '00 Mike Price decided due to health reason to step down.***
  P. Jenni/ATLAS management started to look for a new TC.
  At the same time G. Bachy (Chief Eng.), W. Witzeling (Deputy TC) also left ATLAS.

- ***Positive interactions with M. Nessi who was thinking about becoming TC.***
  Found common concerns and the need to strengthen TC.

- ***Before formal appointment Marzio developed the new organization frame work for TC. The main ideas were:***
  - ***"projectize" TC activities.***
  - ***Strengthen the TC in manpower***
  - ***Establish a well define ATLAS baseline***
    - **Envelopes**
    - **Schedule**
    - **Movements, Survey needs etc.**
  - ***Review process that tracks performance relative to the baseline for the systems.***

"New TC" Proposal

- *P.Jenni and the ATLAS management agreed with the general outline of the proposal and promised to help in its implementation. M. Nessi accepted to than be the ATLAS TC.*

- *A formal proposal along this line what was accepted by the ATLAS Management and the collaboration. (See Nessi Presentation)*

- *Part of the plan was to get outside institutions involved in TC.*

  The US showed strong support (US ATLAS management, funding agencies) for this effort.

US Involvement

- *US formal involvement in TC started in early '01. We got*
  Project funds were allocated to support TC activities in the US and at CERN.

- *D. Lissauer accepted to be Activity A manager in the new TC.*
  Activity A is defined as the "Project Office".
  (See earlier presentation)

- *As the new TC organization is taking shape it is important to find the best way to utilize US resources to help in the implementation of the plan.*

- *US should make significant contribution in critical areas.*
  The overall scale of US contribution is small but can be (needs to be) effective.

- *US advantages:*
  - *Utilize existing expertise in the US.*
  - *Flexibility in funding.*

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Activity A

TC ATLAS project

US Involvement in Activity A:

D. Lissauer : ***Activity Manager***

K. Pommes:

- **PPT Implementation**
- **Documentation Center on the Web**
- **ECR**
- **Installation Data Base**

In the "battle" for resources it is important that Project Management is able to function.

This is one area that ATLAS was sub-critical in both manpower and priority.

(See Presentations by D. Lissauer, K. Pommes)

Radiation Studies – Forward region Optimization

- ***Mike Shupe is leading this part of the US effort.***

Vincent Hedberg is the TC responsible for the ATLAS shielding.

A new re-optimization of the Shielding is underway it includes:

- **Optimization of ATLAS shielding**
- **Muon Backgrounds**
- **Activation Studies**

- **Mike Shupe studies are critical for this re-optimization.**
- **US-ATLAS computing Cycles (~ 50%)**

TC – Mechanical Integration

From M. Nessi, M. Hatch and O. Beltramello one of the priorities that TC had to address was the establishment of an ATLAS baseline and configuration control.

Since the beginning of '01 an large amount of work has been done by a small team of people. US contribution there was critical. We have two senior Cad Designers working in Olga's team.

Senior CAD designer T. Klioutchnikova: ***(Supported at CERN)***

- **Systems envelope review leader**
- **follow up of CAD designers**
- **information recovery for detailed envelope review / discussions with systems**
- **conflicts checking and resolution**
- **Gap task force associated drawings**

Senior CAD designer S. Norton: ***(at BNL)***

- **CDD drawings verifications**
- **Access drawings**

In addition S. Norton worked on US specific integration Issues. (Calorimeter Survey, Muon Survey, CDD drawings for Cryostat and Muons)

Installation – Access Studies

Access is one of the main problems in the ATLAS experiment.

- ***Difficult geometry.***
- ***Activation problems due to LHC Luminosity.***
- **Significant *amount of electronics inside the detector.***

Access for servicing an important issue

- ***ACCESS STUDIES***
- ***FIXED STRUCTURES***

Anatoli Grodeev ***– work with Tommi Nymann on Access Scenarios and tooling***

(Still some obligation to CSC's. – Expect to be finished with this soon)

Movements

MOVING SYSTEMS:

Design of the moving systems (HF trucks, Air pads, Hydraulic cylinders, Process controls, hydraulic systems).

Take the engineering from the design phase through to procurement and installation and commissioning.

Plan to add one Engineer in this effort:

One Engineer at Argon (Vic Guarino) to work on Movements/Cal interfaces.

Muon Integration

Forward System is one of the more complicated systems in ATLAS.
(See Forward Task Force)

Jim Bensinger is working on the Muon Alignment system.

This is closely associated with the overall problems of Muon Forward integration

Jim has agreed to act as a Forward Liaison between TC and the Muon system

First questions that are being attacked:

Envelope conflicts with the alignment system.
Rails
Wheel Structures

Survey targets positions on chambers

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Summary

US Physicists Involved in TC:

D. Lissauer	***- TC Activity A, Gap Task Force, Placement Strategy***
M. Shupe	***- Radiation/Activation Studies***
J. Bensinger	***- Forward Muon Integration***

TC Support @ CERN:

K. Pommes	***Project Management – Eng.***
T. Klioutchnikova	***Senior Designer – Conf. Control***

BNL:

S. Norton	***Senior Designer – Conf. Control***
A. Gordeve	***Engineer - Access***

Additional People:

V. Guarino	***Movements/FEA Calc.***
Add. Eng. @ CERN	
Add. Designer @ BNL	

Conclusions

- **New TC organization is taking shape.**

  TC is being strengthened – but at a slower rate than we hoped.

  There are good signs that other collaborators are putting TC activities on a higher level. (More is needed)

- **US effort is effective.**

  Areas for US contributions have been identified.

  Engineers have been identified both at CERN and in the US to strengthen this areas.

  Physicists involvement is increasing.

The US has a critical role in TC and effort should increase to make sure that ATLAS is successful.